UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,415	11/02/2001	Thomas Kolze	13199US02	9101

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EXAMINER
KUMAR, PANKAJ

ART UNIT	PAPER NUMBER
2631	

DATE MAILED: 09/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/000,415	KOLZE ET AL.
	Examiner	Art Unit
	Pankaj Kumar	2631

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>*19 September 2005*</u>.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18-22* is/are allowed.

6)☒ Claim(s) *1-3,6-9 and 11-16* is/are rejected.

7)☒ Claim(s) *4,5,10 and 17* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed have been fully considered and they are persuasive in regards to Chennakeshu and not persuasive in regards to Chen.

2.   Kevin Borg was called on 9/27/2005 as requested in his response. He was told that the next action will be nonfinal as some of the same arguments will be used for some of the claims while a new reference will be cited for some of the other claims.

3.   Applicant argues that Chen does not teach error since it instead teaches a SER check detector. This is not persuasive since SER is stands for symbol error rate and hence Chen teaches error.

4.   Applicant argues that Chen does not teach error estimate and instead Chen teaches SER check detector. This is not persuasive since SER changes constantly and hence each SER at a particular time is only an estimate of the error and not necessarily the actual error of the whole system.

5.   Applicant argues that Chen does not disclose a select symbol since it discusses a system in terms of frames. This is not persuasive since frames have symbols and also Chen is determining the symbol error rate which inherently has a chosen symbol.

Response to Amendment

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 11, 12, 13, 15, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Chen USPN 5,751,725. Here is how the reference teaches the claim:

8.   As per claim 11: A method of impairment mitigation in a communications system

comprising: generating at least one error estimate of a signal (Chen fig. 3: SER is symbol error

rate) received from a channel (Chen fig. 1: channel 18 to 20); determining if the channel is

degraded based on the at least one error estimate (Chen fig. 3 126, 132: if SER is greater than

max SER, then the rate in 128, 134 will not be determined since it is degraded; if this is not

sufficient then, it would be obvious as discussed below); erasing a select symbol of the signal if

the channel is degraded (Chen fig. 2 132, 126: if the SER is above max symbol error rate, it is

marked as being erased since the channel is degraded as reflected by the high SER; col. 7 lines

52-53: outputs no frame if an erasure is declared; col. 7 lines 24-36: if erasure is not declared, it

would output noise); and decoding the signal (Chen fig. 1: 30).

9.   Even if one believes that error estimate is not taught in Chen, it would be obvious for

Chen to teach error estimate. Chen teaches SER which is symbol error rate. Chen also teaches

that SER changes constantly Chen and hence each SER at a particular time is only an estimate of

the error and not necessarily the actual error of the whole system. Thus, it would have been

obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the error

estimate as recited by the instant claims, because the combined teaching of Chen suggests error

estimate as recited by the instant claims. Furthermore, one of ordinary skill in the art, would

have been motivated to arrive at the error estimate as recited by the instant claims because Chen

suggests symbol error rate (broadly) in general and Chen also suggests the beneficial use of SER

changing constantly and hence each is an estimate such as in order to adapt the system quickly

instead of waiting to find the final error values in the analogous art of error.

10.   As per claim 12: The method of claim 11 further comprising keeping the select symbol if

the channel is not degraded (Chen fig. 3 126, 132: if SER is not above max SER which is an

indication that the channel is acceptably not degraded, the symbol is kept in order to determine

the rate in 128, 134).

11.   As per claim 13: The method of claim 11 further comprising decoding the signal (Chen

fig. 1: 30) and encoding the signal (Chen fig. 1: 10) before generating the at least one error

estimate (Chen fig. 1: 10 and 30 occur before 32, 34).

12.   As per claim 15: The method of claim 11 wherein the signal comprises at least one

symbol, and wherein determining whether the channel is degraded comprises: comparing the at

least one error estimate to at least one predetermined threshold (Chen fig. 3 126, 132: SER

compared against max SER).

13.   As per claim 16: The method of claim 15 wherein the channel is degraded if the at least

one error estimate is above the at least one predetermined threshold (Chen fig. 3 126, 132, 130: if

SER is above max SER then channel is degraded is indicated by the symbol being marked for

erasure).

14.   Claims 1, 2, 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vasic

USPN 6,691,263 in view of Merriam Webster's Collegiate Dictionary. Here is how the

references teach the claims:

15.   As per claim 1: A method of impairment mitigation in a communications system

comprising: generating at least one error estimate of a signal (Vasic col. 5 lines 43-46: extracting

error event likelihoods), determining a channel fidelity metric (Vasic col. 5 lines 46-47: bit

reliabilities; it is a metric as it is a measurement) using the at least one error estimate (Vasic col.

5 lines 46-47: error event likelihoods); and decoding the signal using the channel fidelity metric

(Vasic col. 5 lines 48-51: decoding based on bit reliabilities).

16.   Vasic does not teach fidelity. Webster's dictionary teaches fidelity as being an accuracy

in details in definition 1b under fidelity on page 432. By Vasic determining reliabilities, Vasic is

determining accuracy and hence fidelity. Thus, it would have been obvious, to one of ordinary

skill in the art, at time the invention was made, to arrive at the fidelity as recited by the instant

claims, because the combined teaching of Vasic with Webster's dictionary suggests fidelity as

recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been

motivated to combine the teachings of Vasic with Webster's dictionary because Vasic suggests

reliabilities (something broad) in general and Webster's dictionary suggests having fidelity

provides the beneficial use of having accuracy or reliability in the analogous art of reliability.

17.   As per claim 2: The method of claim 1 wherein the signal comprises one of at least one

digital sample (Vasic col. 5: a bit in inherently a digital sample) or at least one symbol.

18.   As per claim 3: The method of claim 2 further comprising storing the channel fidelity

metric (channel fidelity metric is discussed above; col. 11 lines 61-65: register stores

reliabilities).

19.   Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vasic 6691263 in

view of Merriam Webster's Collegiate Dictionary as applied to claim 1 above, and further in

view of Olafsson 5910959. Here is how the references teach the claim:

20.   As per claim 6: Vasic in view of Webster's dictionary does not teach determining at least

one constellation point closest to the at least one symbol; determining a distance between the at

least symbol and the at least one constellation point; and squaring the distance. Olafsson teaches

determining at least one constellation point (Olafsson 5910959 col. 6 lines 12-13, 22) closest to

the at least one symbol (Olafsson col. 4 lines 49-50, 52-53); determining a distance between the

at least symbol and the at least one constellation point (Olafsson col. 4 lines 49-50, 52-53); and

squaring the distance (Olafsson col. 4 lines 49-50, 52-53). Thus, it would have been obvious, to

one of ordinary skill in the art, at time the invention was made, to arrive at the determining at

least one constellation point closest to the at least one symbol; determining a distance between

the at least symbol and the at least one constellation point; and squaring the distance as recited

by the instant claims, because the combined teaching of Vasic in view of Webster's dictionary

with Olafsson suggest determining at least one constellation point closest to the at least one

symbol; determining a distance between the at least symbol and the at least one constellation

point; and squaring the distance as recited by the instant claims. Furthermore, one of ordinary

skill in the art, would have been motivated to combine the teachings of Vasic in view of

Webster's dictionary with Olafsson because Vasic in view of Webster's dictionary suggests decoding (something broad) in general and Olafsson suggests the beneficial use of decoding with constellation (Olafsson col. 6 lines 7-18) such as to correct errors where signals are modulated on to a constellation in the analogous art of decoding.

21.   Claims 7, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vasic 6691263 in view of Webster's as applied to claim 1 above, and further in view of Tiedemann USPN 5,604,730. Here is how the references teach the claims:

22.   As per claim 7: Vasic 6691263 in view of Websters's teaches the method of claim 1 wherein the signal comprises at least one symbol, and determining a channel fidelity metric. Vasic 6691263 in view of Websters's does not teach comparing the at least one error estimate to at least one predetermined threshold. Tiedemann teaches comparing the at least one error estimate to at least one predetermined threshold (Tiedemann 5604730 fig. 1: 125 comparing error estimate Eb/Io with desired or threshold Eb/Io; 100, 105, 115, 120). Thus, it would have been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the comparing the at least one error estimate to at least one predetermined threshold as recited by the instant claims, because the combined teaching of Vasic 6691263 in view of Websters's with Tiedemann suggest comparing the at least one error estimate to at least one predetermined threshold as recited by the instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to combine the teachings of Vasic 6691263 in view of Websters's with Tiedemann because Vasic 6691263 in view of Websters's suggests error estimate (something broad) in general and Tiedemann suggests the beneficial use of comparing the error estimate to a

threshold in order to increase or decrease power for better communication and saving energy in

the analogous art of communication.

23.   As per claim 8: The method of claim 7 further comprising generating a first indication if

the at least one error estimate is above the at least one predetermined threshold (Tiedemann fig.

1: yes output of 125, 130) and a second indication if the at least one error estimate is not above

the at least one predetermined threshold (Tiedemann fig. 1: no output of 125, 135, 140).

24.   Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Vasic 6691263 in

view of Websters's with Tiedemann as applied to claim 7 above, and further in view of Chen

USPN 5,751,725. Here is how the references teach the claim:

25.   As per claim 9: Vasic 6691263 in view of Websters's with Tiedemann teach the method

of claim 7. Vasic 6691263 in view of Websters's with Tiedemann does not teach keeping a

select symbol if the at least one error estimate is below the at least one predetermined threshold,

and erasing the select symbol if the at least one error estimate is above the at least one threshold.

Chen teaches keeping a select symbol (Chen 5751725 fig. 2: 104 yes, 108, 126 no, 128, 132 no,

134) if the at least one error estimate is below the at least one predetermined threshold (Chen fig.

2: keeps for performing another check 108 when 1 CRC checks; keeps for determining the rate in

128, 134), and erasing the select symbol (Chen fig. 2: 104 no, 106, 130; col. 7 lines 52-53:

outputs no frame if an erasure is declared) if the at least one error estimate is above the at least

one threshold (Chen fig. 2 132, 126: if the SER is above max symbol error rate, it is marked as

being erased; col. 7 lines 52-53: outputs no frame if an erasure is declared). Thus, it would have

been obvious, to one of ordinary skill in the art, at time the invention was made, to arrive at the

keeping a select symbol if the at least one error estimate is below the at least one predetermined

threshold, and erasing the select symbol if the at least one error estimate is above the at least one

threshold as recited by the instant claims, because the combined teaching of Vasic 6691263 in

view of Websters's with Tiedemann with Chen suggest keeping a select symbol if the at least

one error estimate is below the at least one predetermined threshold, and erasing the select

symbol if the at least one error estimate is above the at least one threshold as recited by the

instant claims. Furthermore, one of ordinary skill in the art, would have been motivated to

combine the teachings of Vasic 6691263 in view of Websters's with Tiedemann with Chen

because Vasic 6691263 in view of Websters's with Tiedemann suggests thresholding (something

broad) in general and Chen suggests the beneficial use of keeping and erasing based on the

threshold such as being able to determine the communication rate of the system in the analogous

art of communication.

26.   Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen USPN

5,751,725 as applied to claim 11 and further in view of Olafsson. See prior action for details.

Allowable Subject Matter

27.   Claims 4 and 5 are objected to.

28.   Claims 10 and 17 are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the base

claim and any intervening claims.

29.   Claims 18-20, 21, 22 are allowed.

30.   The following is a statement of reasons for the indication of allowable subject matter:

The art of record does not suggest the respective claim combinations together and nor would the

respective claim combinations be obvious with:

31.   As per claims 18-20: modifying the branch metric based on the channel fidelity metric,

and decoding the signal using the modified branch metric

32.   As per claim 21: determining a first error estimate from the sequence of symbols;

determining a second error estimate from a second portion of the sequence of symbols including

the at least one select symbol; determining a third error estimate from a third portion of the

sequence of symbols including the at least one select symbol; comparing the first error estimate

to a first predetermined threshold, and the second and third error estimates to a second

predetermined threshold; and erasing at least a portion of the at least one select symbol if the first

error estimate is above the first predetermined threshold and if the second and third error

estimate are above the second predetermined threshold.

33.   As per claim 22: determining a first error estimate from the sequence of symbols;

determining a second error estimate from a second portion of the sequence of symbols including

the at least one select symbol; determining a third error estimate from a third portion of the

sequence of symbols including the at least one select symbol; comparing the first error estimate

to a first predetermined threshold, and the second and third error estimates to a second

predetermined threshold; and generating an indication that the channel is degraded if the first

error estimate is above the first predetermined threshold and if the second and third error

estimates are above the second predetermined threshold.

Conclusion

34.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (571) 272-3011. The examiner can normally be reached on Mon, Tues, Thurs and Fri after 8AM to after 6:30PM.

35.   If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

36.   Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Pankaj Kumar/

Pankaj Kumar
Patent Examiner
Art Unit 2631

PK